

REMARKS

Amendment To Claims

Applicants are amending Claims 1-2, 5-6, 9-11, 15-16, 20-21, 24-25, 28-30 and 34-36 in order to clearly recite the claimed invention¹. Claim 1, for example, has been amended to recite “wherein a refractive index of the transparent film gradually varies from an interface at a side of the substrate to an interface at a side of the first electrode” (emphasis added). The claimed feature of “gradually” is supported by, for example, page 23, lines 6-13 of the specification (see also page 22, lines 19-26). In particular, this passage in the specification states:

“Silicon is used as a target for sputtering. The electric current source can be direct current (DC) or alternating current (AC) for sputtering. Argon, oxygen, and nitrogen can be used as the gas for sputtering. The flow rate of nitrogen is gradually increased from 0 sccm to 30 sccm, and the flow rate of oxygen is gradually reduced from 30 sccm and to 0 sccm, thereby forming the silicon oxynitride. By changing the proportion of silicon oxide and silicon nitride in a growing film, the silicon oxynitride film in which the composition of nitrogen and oxygen is sequentially changed is formed.” (emphasis added)

Since the gas flow rates of nitrogen and oxygen for sputtering gas are gradually varied during the film formation, the composition of the film also gradually varies. This leads the refractive index of the film to gradually vary. Accordingly, the amendment is clearly supported in the specification of the present application. Therefore, it is respectfully requested that this amendment be entered and allowed at this time.

Applicants will now address the Examiner’s objections and rejections in the order in which they appear in the Office Action.

¹ The remaining claims are being amended to correct informalities therein.

Specification

Claims 6, 25 and 36

In the Office Action, the Examiner objects to the specification as failing to provide a proper antecedent basis for the claimed subject matter. In particular, with regard to Claim 6, the Examiner contends that the specification does not provide an antecedent basis for "refractive index of the transparent film sequentially increases from the interface at the side of the second electrode". The Examiner has a similar objection to Claims 25 and 36.

Accordingly, in order to advance the prosecution of this application, Applicants are amending Claims 6, 25 and 36 to recite "the refractive index of the transparent film gradually decreases from the interface at the side of the second electrode in the film thickness direction." This feature is supported by, for example, page 18, lines 1-19 of the specification of the present application.

It is respectfully submitted that this amendment overcomes the Examiner's objection, and it is requested that the objection be withdrawn.

Title

The Examiner also objects to the title as not being descriptive and is requiring that a new title be submitted. Accordingly, Applicants are amending the title to recite "Light Emitting Device Having Transparent Film Varying Refractive Index And Manufacturing Method Thereof." It is respectfully submitted that this overcomes the Examiner's objection, and it is requested that the objection be withdrawn.

Claim Objections

The Examiner also objects to claims 6, 25 and 36 for the informality discussed above. As explained above, Applicants have amended these claims. Therefore, it is respectfully submitted that this amendment overcomes the Examiner's objection, and it is requested that the objection be withdrawn.

Claim Rejections - 35 USC §102

Claims 1-3, 9-13, 20-22 and 28-32

The Examiner also rejects Claims 1-3, 9-13, 20-22 and 28-32 under 35 USC §102(e) as being anticipated by Utsumi et al. (US Publ. 2004/0166362). This rejection is respectfully traversed.

More specifically, the Examiner asserts the Usami teaches (in e.g. [0032]) a light emitting device comprising a transparent film (allegedly inorganic film layer 6) formed over a substrate wherein a refractive index of the transparent film "sequentially varies" from

While Applicants traverse this rejection, in order to advance the prosecution of this application, as explained above, Applicants have amended independent Claims 1, 9, 20 and 28 to recite the feature of "wherein a refractive index of the transparent film gradually varies" (emphasis added). In contrast, Usami teaches that "[t]he inorganic film layer is formed of at least double layers" [0032]. Hence, Usami's inorganic film (or the alleged transparent film) includes a plurality of layers. Further, as described in [0032], each layer of the inorganic film has respective refractive indexes.

Therefore, Usami does not disclose or suggest the device of independent Claims

1, 9, 20 and 28. Accordingly, these independent claims and those claims dependent thereon are patentable over Usami, and it is respectfully requested that this rejection be withdrawn.

Claims 5-8, 15-19, 24-27 and 34-39

The Examiner also rejects Claims 5-8, 15-19, 24-27 and 34-39 under 35 USC §102(e) as being anticipated by Hayashi et al. (US Publ. 2004/0124770). This rejection is also respectfully traversed.

More specifically, the Examiner asserts that Hayashi teaches a light emitting device comprising “a transparent film (gas-barrier layer) 30 over the second cathode [sic second electrode].” Further, the Examiner alleges that the oxygen concentration variation of Hayashi corresponds to a refractive index variation.

While Applicant traverse this rejection, in order to advance the prosecution of this application, as explained above, Applicant has amended independent Claims 5, 15, 24 and 34 to clearly recite the feature of “wherein a refractive index of the transparent film gradually varies” (emphasis added).

In contrast, when the gas-barrier layer in Hayashi has an oxygen concentration variation, the gas-barrier layer is a laminated structure including sublayers composed of different silicon compounds (See e.g. [0071] in Hayashi). As stated above, the Examiner contends that the oxygen concentration variation of Hayashi corresponds to a refractive index variation, but such structure includes the sublayers discussed above.

Therefore, Hayashi cannot disclose or suggest the device of independent Claims 5, 15, 24 and 34. Accordingly, these independent claims and those claims dependent

thereon are patentable over Hayashi, and it is respectfully requested that this rejection be withdrawn.

Claim Rejections - 35 USC §103

The Examiner also rejects Claims 4, 14, 23 and 33 under 35 USC §103(a) as being unpatentable over Utsumi et al. and further in view of Hayashi et al. This rejection is also respectfully traversed.

Each of these claims is a dependent claim. Therefore, for at least the reasons discussed above for the independent claims, these claims are also patentable over cited references. Accordingly, it is respectfully requested that this rejection be withdrawn.

Conclusion


It is respectfully submitted that the present application is in a condition for allowance should be allowed.

Please charge our Deposit Account No. 50-1039 for any fee due for this amendment.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

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